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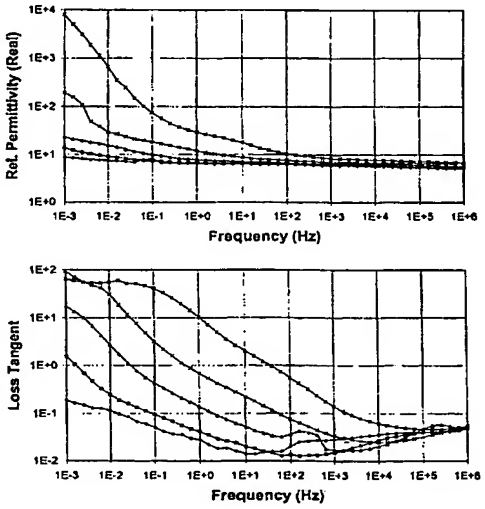
(54) Title: NANOMETRIC COMPOSITES AS IMPROVED DIELECTRIC STRUCTURES



(57) Abstract: A dielectric is provided which possesses high dielectric constant and high dielectric strength, while having the capabilities of a polymer. The dielectric comprises a nanometric composite, which includes a stoichiometric nano- particulate filler embedded in a polymer or resin matrix. Filler particles are reduced in physical size to dimension to the same order as the polymer chain length of the host material and interact cooperatively thereby mitigating the associated Maxwell-Wagner process and reducing interfacial polarization. The internal fields for the new formulation are nearly a factor of 10 lower then for conventional (micro) material. The large changes in the internal field of the composite permit engineering of nanocomposite materials with enhanced electric strength and improved voltage endurance properties.

WO 2004/034409 A1